MONTANA Economy at a Glance

OCTOBER 2008

EMPLOYMENT BY INDUSTRY

(Does not include self-employed or agricultural employment)

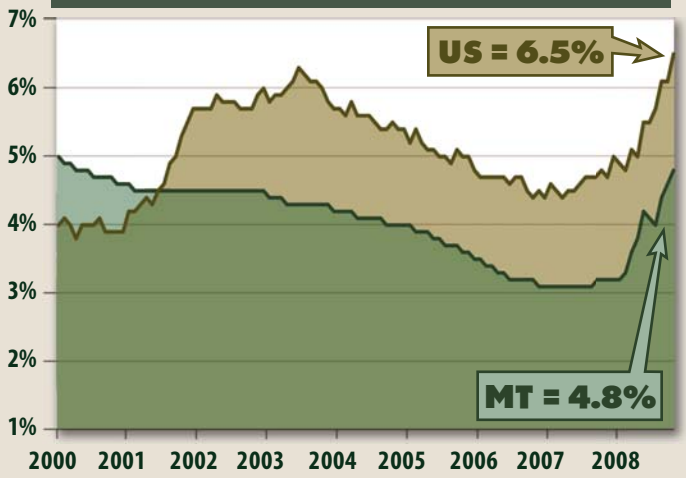
Industry Employment (in thousands)	Oct.(P) 2008	Sept. 2008	Net Change	Percent Change
Total Non-Agricultural	449.9	449.0	0.9	0.2%
Natural Resources & Mining	8.3	8.2	0.1	1.2%
Construction	30.8	30.5	0.3	1.0%
Manufacturing	20.6	20.4	0.2	1.0%
Trade, Transportation, & Utilities	93.1	92.9	0.2	0.2%
Information	7.8	7.7	0.1	1.3%
Financial Activities	21.7	22.0	-0.3	-1.4%
Professional & Business Services	40.3	40.3	0.0	0.0%
Education & Health Services	60.6	60.5	0.1	0.2%
Leisure & Hospitality	60.4	59.9	0.5	0.8%
Other Services	17.6	17.7	-0.1	-0.6%
Total Government	88.7	89.2	-0.5	-0.6%

(P) denotes preliminary figures

Montana's seasonally-adjusted non-agricultural payroll employment increased by 900 jobs (+0.2%) from September to October 2008. The largest gains were seen in the Leisure and Hospitality sector, with 500 jobs added (+0.8%), and the Construction sector, with 300 additional jobs (+1.0%).

UNEMPLOYMENT RATE

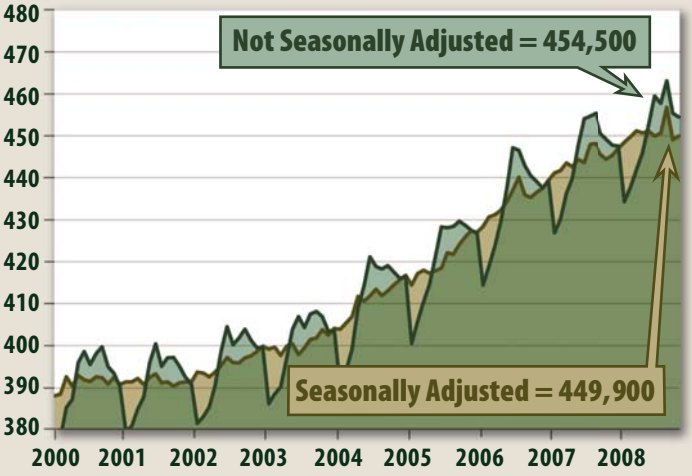
Seasonally Adjusted



Montana's seasonally-adjusted unemployment rate increased to 4.8% in October 2008 from 4.6% in September. The U.S. rate also rose over the month, increasing from 6.1% to 6.5% for October.

NON-FARM EMPLOYMENT

In Thousands



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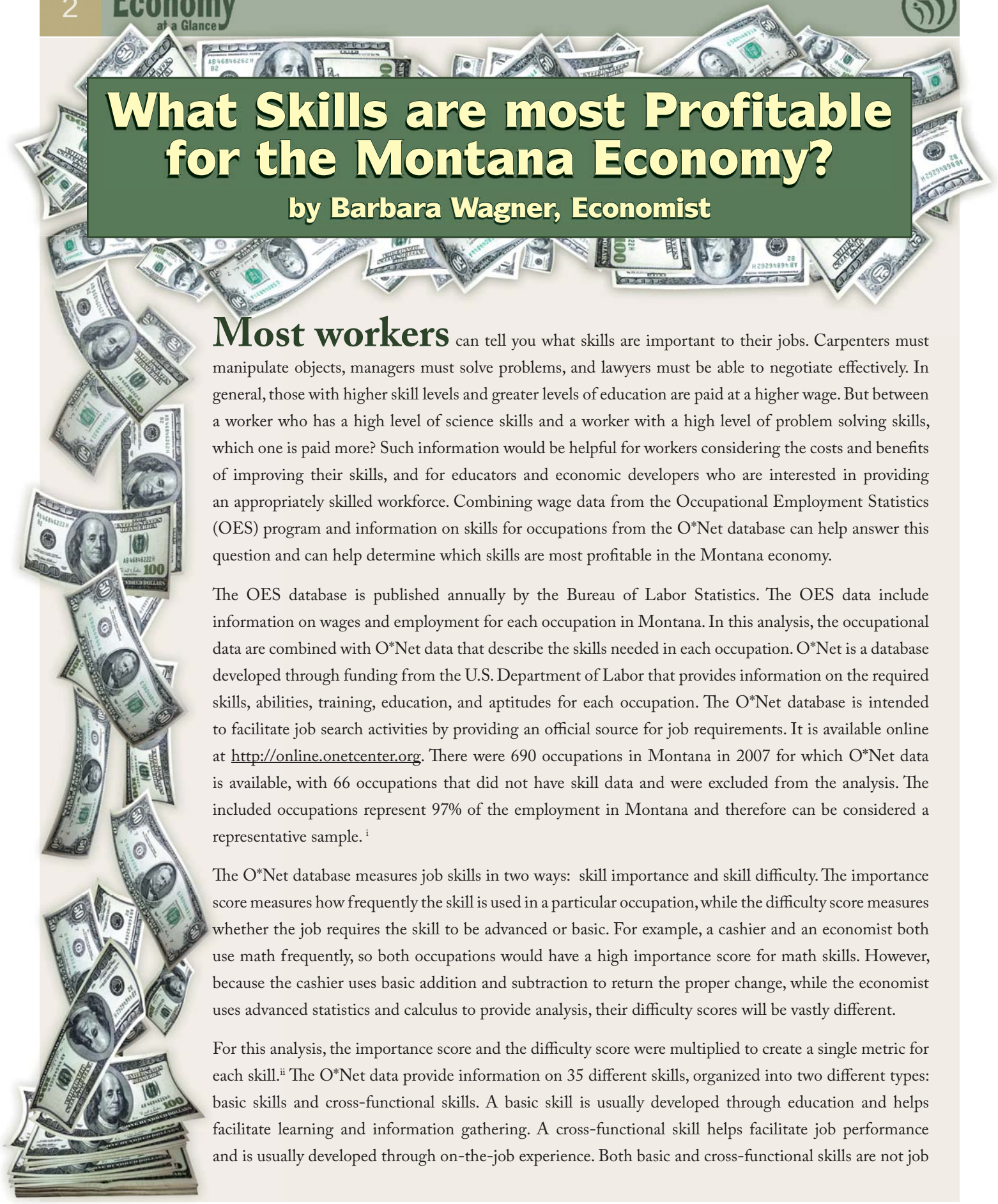
What Skills are most Profitable for the Montana Economy?

by Barbara Wagner, Economist



Most workers can tell you what skills are important to their jobs. Carpenters must manipulate objects, managers must solve problems, and lawyers must be able to negotiate effectively. In general, those with higher skill levels and greater levels of education are paid at a higher wage. But between a worker who has a high level of science skills and a worker with a high level of problem solving skills, which one is paid more? Such information would be helpful for workers considering the costs and benefits of improving their skills, and for educators and economic developers who are interested in providing an appropriately skilled workforce. Combining wage data from the Occupational Employment Statistics (OES) program and information on skills for occupations from the O*Net database can help answer this question and can help determine which skills are most profitable in the Montana economy.

The OES database is published annually by the Bureau of Labor Statistics. The OES data include information on wages and employment for each occupation in Montana. In this analysis, the occupational data are combined with O*Net data that describe the skills needed in each occupation. O*Net is a database developed through funding from the U.S. Department of Labor that provides information on the required skills, abilities, training, education, and aptitudes for each occupation. The O*Net database is intended to facilitate job search activities by providing an official source for job requirements. It is available online at http://online.onetcenter.org. There were 690 occupations in Montana in 2007 for which O*Net data is available, with 66 occupations that did not have skill data and were excluded from the analysis. The included occupations represent 97% of the employment in Montana and therefore can be considered a representative sample. [i]

The O*Net database measures job skills in two ways: skill importance and skill difficulty. The importance score measures how frequently the skill is used in a particular occupation, while the difficulty score measures whether the job requires the skill to be advanced or basic. For example, a cashier and an economist both use math frequently, so both occupations would have a high importance score for math skills. However, because the cashier uses basic addition and subtraction to return the proper change, while the economist uses advanced statistics and calculus to provide analysis, their difficulty scores will be vastly different.

For this analysis, the importance score and the difficulty score were multiplied to create a single metric for each skill.[ii] The O*Net data provide information on 35 different skills, organized into two different types: basic skills and cross-functional skills. A basic skill is usually developed through education and helps facilitate learning and information gathering. A cross-functional skill helps facilitate job performance and is usually developed through on-the-job experience. Both basic and cross-functional skills are not job

specific and can be easily transferred into other occupations. The skills included in O*Net and their descriptions can be seen in Chart 1.

The occupations were then divided into three categories – high skill, medium skill, and low skill – based on their skill score. For example, the skill score for math ranges from a high of 33.9 to a low of 0.28. Those occupations with a math score in the top third, such as Mathematicians, were placed in the high math skill category, while those in the middle third (Parts Salesmen) were placed in the medium math skill category. Finally, those in the lowest third for the math score, such as Security Guards, were placed in the low math skill category. The average wage and number of jobs for each category can be seen in Chart 2.

Chart One: O*Net Skills and Descriptions

	Skill	Description
Basic Skills	Reading Comprehension	Understanding written sentences and paragraphs in work related situations.
	Active Listening	Giving full attention to what other people are saying, taking time to understand the points being made, asking appropriate questions, and not making inappropriate interruptions.
	Writing	Communicating effectively in writing as appropriate for the needs of the audience.
	Speaking	Talking to others to convey information effectively.
	Mathematics	Using mathematics to solve problems.
	Science	Using scientific rules and methods to solve problems.
	Critical Thinking	Using logic and reasoning to identify the strengths and weaknesses of alternate solutions to problems.
	Active Learning	Understanding the implications of new information for both current and future problem-solving and decision-making.
	Learning Strategies	Selecting and using training methods and procedures appropriate for the situation when learning or teaching new things.
	Monitoring	Monitoring or assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.
Cross-Functional Skills	Social Perceptiveness	Being aware of others' reactions and understanding why they react as they do.
	Coordination	Adjusting actions in relation to others' actions.
	Persuasion	Persuading others to change their minds or behavior.
	Negotiation	Bringing others together and trying to reconcile differences.
	Instructing	Teaching others how to do something.
	Service Orientation	Actively looking for ways to help people.
	Complex Problem Solving	Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.
	Operations Analysis	Analyzing needs and product requirements to create a design.
	Technology Design	Generating or adapting equipment and technology to serve user needs.
	Equipment Selection	Determining the types of tools needed for a job.
	Installation	Installing equipment, machines, wiring, or programs according to specifications.
	Programming	Writing computer programs for various purposes.
	Operation Monitoring	Watching gauges, dials, or other indicators to make sure a machine is working properly.
	Operation and Control	Controlling operations of equipment or systems.
	Equipment Maintenance	Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.
	Troubleshooting	Determining causes of operating errors and deciding what to do about it.
	Repairing	Repairing machines or systems using the needed tools.
	Quality Control Analysis	Conducting tests and inspections of products, services, or processes to evaluate quality or performance.
	Judgment and Decision Making	Considering the relative costs and benefits of potential actions to choose the appropriate one.
	Systems Analysis	Determining how a system should work and how changes in conditions, operations, and the environment will affect outcomes.
	Systems Evaluation	Identifying measures of indicators of system performance and the actions needed to improve or correct performance relative to the goals of the system.
	Time Management	Managing one's own time and the time of others.
	Management of Financial Resources	Determining how money will be spent to get the work done and accounting for theses expenditures.
	Management of Material Resources	Obtaining and seeing to the appropriate use of equipment, facilities, and materials needed to do certain work.
	Management of Personnel Resources	Motivating, developing, and directing people as they work, identifying the best people for the job.

Chart Two: Value of Skills - Average Wage and Employment by Skill Level

Skill		Average Wage by Skill Level			Employment by Skill Level		
		High	Medium	Low	High	Medium	Low
Average for All Skills		$48,520	$34,410	$25,300	74,420	129,240	218,770
Basic Skills	Active Listening	45,300	35,680	27,180	61,510	117,010	243,910
	Critical Thinking	45,210	39,240	23,910	71,690	128,060	222,670
	Reading Comprehension	44,720	36,370	24,510	72,850	148,860	200,720
	Monitoring	44,710	36,820	25,070	81,570	119,110	221,750
	Science	43,940	33,150	29,090	53,590	124,960	243,880
	Speaking	43,780	33,690	25,680	77,580	167,310	177,540
	Writing	41,450	35,780	24,590	78,130	168,600	175,700
	Mathematics	41,040	32,800	26,970	82,620	177,860	161,950
	Learning Strategies	40,490	33,820	28,650	77,220	111,190	234,020
	Active Learning	40,460	36,300	25,290	81,090	152,430	188,900
Cross-Functional Skills	Complex Problem Solving	51,100	39,790	24,040	67,510	102,230	252,690
	Systems Evaluation	49,790	35,850	25,740	69,650	103,240	249,540
	Systems Analysis	48,510	32,720	26,560	73,790	122,010	226,620
	Judgment and Decision Making	47,780	39,320	24,910	66,000	108,260	248,170
	Persuasion	45,960	31,500	25,510	90,720	160,210	171,490
	Management of Personnel Resources	45,920	33,930	24,980	94,090	119,360	208,990
	Management of Material Resources	45,600	32,000	27,490	79,300	120,210	222,920
	Operations Analysis	45,430	33,340	28,480	57,560	120,470	244,400
	Negotiation	45,020	32,180	25,320	103,440	125,030	193,960
	Management of Financial Resources	44,700	31,170	26,510	99,740	124,120	198,570
	Time Management	44,130	35,370	25,800	74,770	138,110	209,550
	Coordination	42,690	40,820	24,410	68,230	123,890	230,310
	Quality Control Analysis	42,370	39,700	26,560	63,390	104,110	254,920
	Programming	41,800	33,500	27,370	57,530	195,870	169,020
	Technology Design	41,780	34,030	29,190	54,550	118,770	249,100
	Social Perceptiveness	40,540	29,840	28,690	106,890	178,410	137,130
	Instructing	40,480	35,700	27,510	75,280	121,350	225,800
	Troubleshooting	39,840	33,390	29,270	63,510	134,760	224,160
	Service Orientation	39,750	31,490	28,350	104,320	136,230	181,880
	Installation	39,360	30,570	30,740	72,890	130,860	218,680
	Equipment Selection	38,940	33,070	29,630	67,720	128,930	225,780
	Operation Monitoring	38,410	34,150	28,250	66,400	166,640	189,390
	Operation and Control	38,220	35,180	27,490	66,660	164,310	191,460
	Repairing	35,730	30,050	31,880	89,800	121,230	211,400
	Equipment Maintenance	33,990	29,750	33,020	88,390	135,020	199,030

The 'all' score is based on the occupations' average score across all skills and can be considered a general measure of high-skill, medium-skill, and low-skill jobs. By comparing the employment numbers for this category, it is also clear that the majority of jobs in Montana (52% or 218,770) fall within the low-skill category, with 31% of jobs (129,240) in medium skill jobs and only 18% of workers (74,420) working in high skill jobs. This distribution of workers is not significantly different than the distribution of workers in the nation as a whole.[iii] Not surprisingly, the average wage for high-skill jobs ($48,520) is higher than medium-skill and low-skill jobs ($34,410 and $25,300 respectively).

Similar distributions of employment and wages are evident in most of the individual skill categories as well. Employment is lowest and salaries are highest in the high skill category. In fact, higher skills earn higher wages in every skill category except Installation, Equipment Maintenance, and Repairing skills, where the medium skill wage is lower than the low skill wage.

Which skill is "most profitable" likely depends on your perspective. If you are in the majority of Montanans that work in low skill jobs, low skill Equipment Maintenance, Repairing, and Installation all have average wages above $30,000, but improving these skills and moving to a high or medium skill job within these skills has a small or negative return. The skill with the greatest difference between the low skill wage and medium skill wage is Coordination, while the greatest difference between the low and high skill wages is Complex Problem Solving skills.

If your skill set is more advanced, you may be interested in obtaining employment that requires high skill Complex Problem Solving, which has the highest average wage for all skills. Active Listening has the highest average wage for basic skills. The skill that offers the greatest return

from moving from a medium skill level to a high skill level is Systems Analysis. Workers interested in learning more about the important skills for each occupation, how to improve those skills, and occupations that would be an appropriate next step on the career ladder are encouraged to use the Montana Career Information Systems (MCIS), available at the Research & Analysis Bureau website at www.ourfactsyourfuture.org. The June 2008 Economy at a Glance provides information on how to use the MCIS system.

It is important to keep in mind that wages are determined by market forces – higher wages are paid for occupations and skills that are in high demand or have a low labor supply. Therefore, before choosing a skill to develop, it is important to review the number of jobs available in each skill category.

Interestingly, jobs in occupations requiring a high level of Mathematics skills outnumber the number of jobs requiring high levels of other basic skills. In fact, almost 20% of jobs in Montana are within occupations that require high levels of math skills. Some occupations that fall within this high Mathematics skill category include those you would expect, such as bookkeepers, insurance sales agents, and wholesale and retail buyers, but also some occupations that may be surprising, such as motorcycle mechanics, roofers, and oil and gas derrick operators. These occupations may not require a high difficulty of math skills, but require low-difficulty math skills frequently.

Despite the high demand for math skills in the Montana economy, there does not seem to be a significant premium paid for these skills – the average wage paid for high skill Mathematics jobs ($41,040) is in the middle of the pack compared to the similar figure for other basic skills. Further, the wage increase from low to medium skilled and from medium to high skilled is not as large for Mathematics skills as the increase in other skills. The skills of Active Learning, Service Orientation, and Social Perception also display a similar contradiction of high demand for high level skills, but mediocre returns for these skills.

This contradiction highlights an important caveat for this analysis: employers hire workers based on their full skill set, not for one particular skill. Employers hiring workers with high Mathematics skills may be basing the wage decision on other skills and factors that are considered more important to the job position. For example, a roofer is likely hired for installation and repair skills rather than math, although a roofing job requires a high level of all three skills. Further, factors other than skills – such as education, labor supply and demand, and other unmeasured factors – also play a role in determining wages.

In summary, this simple analysis of the value of skills in the Montana economy provides greater information for workers interested in the costs and benefits of developing skills. This analysis indicates that high level Complex Problem Solving, Systems Evaluation and Analysis, Active Listening, and Decision Making skills are highly-valued in the Montana economy, although Mathematics, Persuasion, Management, Service Orientation, and Social Perception provide the most job opportunities in the high skill occupations. The Research and Analysis Bureau can help workers learn more about improving these and other skills through the MCIS system, available on our website. However, workers should keep in mind that wages are not determined solely by skill level, but are determined by a combination of market forces, abilities, and other factors not included in this analysis.

[i] The excluded occupations had a higher annual average salary than those included in the analysis. The average wage (weighted by employment) for the occupations included was $32,200, slightly lower than the average wage for all occupations of $32,600. The average wage for the excluded occupations was $45,200. However, the majority of the occupations excluded represented the catch-all "all other" occupational categories, such as Computer Specialists, all other. There is no reason to believe that these "all other" workers have significantly different skill sets than those who fit into a specific occupations, such as Computer Specialist, Software.

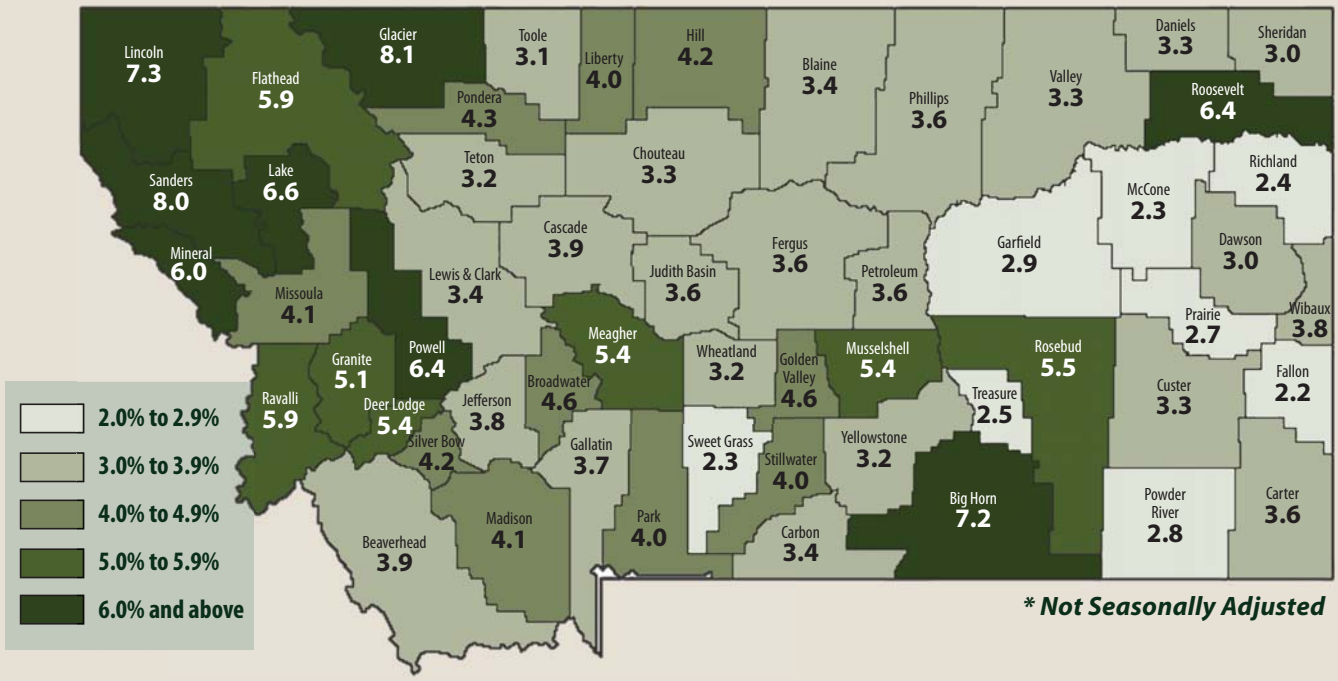
[ii] Because the skill difficulty largely depends on education and training, there is some question as to whether the combined metric is more of a proxy for education levels, rather than the specific skill. The analysis was also conducted using only the importance (frequency) measure with surprisingly similar results. The alternate results are available on request.

[iii] Although not shown on the chart, the distribution for national employment is 19% high skill, 30% medium skill, and 51% low skill.

MONTANA Economy at a Glance

County Unemployment Rates* - October 2008

Montana Average Rate: 4.3%



** Not Seasonally Adjusted*

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